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EXAMINER

NWAONICHA, CHUKWUMA O

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Current Status

1. This action is responsive to Applicants' amendment of 4 September 2008.
2. Receipt of Applicants' Remarks is acknowledged.
3. Claims 1-20 are pending.
4. The 103 and 102 rejections are withdrawn in favor of this rejection.

Applicants' arguments filed 4 September 2008 have been fully considered but they are moot in favor of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sauer et al., {US 5,852,219} or Mashkina et al., {Activity of tungstate catalysts in the synthesis of

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methyl mercaptan from methanol and hydrogen sulfide; Reaction Kinetics and Catalysis Letters (1988), 36(1), 159-164}.

Applicants claim a catalyst for the synthesis of methyl mercaptan, obtainable from aluminum oxide, an alkali metal tungstate and at least one further component selected from the groups of the ammonium salts and of the protic acids sulfuric acid, phosphoric acid, sulfurous acid, tungstic acid, phosphorous acid, hypophosphorous acid, or a mixture thereof, wherein the pH of the catalyst, measured on a 10% strength aqueous suspension, is in the range from 5.0 to 9.7; wherein all the variables are as defined in the claims.

Determination of the scope and content of the prior art (M.P.E.P. §2141.01)

Sauer et al. teach catalyst for the synthesis of methyl mercaptan from hydrogen sulfide and methanol, as well as a process for preparing the catalyst. The catalyst contains active aluminum oxide on which 15% to 40% by weight cesium tungstate is deposited as the activator. The activator, cesium tungstate, gives an unexpected increase in activity and selectivity as compared with potassium tungstate. The reaction was conducted in the presence of 25% ammonia solution, tungstic acid at a pH 8-14 and potassium tungstate charged was from 8%-20%. Sauer et al. teach a process that employed a molar ratio of hydrogen sulfide to methanol of 1.5. The catalyst system showed high selectivity, see columns 5 and 6.

Mashkina et al. teach a catalysis obtained by impregnation of Al_2O_3 with solutions of alkali metal hepta-, dodeca-, and metatungstates and normal alkali metal tungstates. Most selective for MeSH were catalysts with an alkali metal-to-tungsten atomic ratio of

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2:1 wherein the molar ratio of hydrogen sulfide to methanol was 1.6. Mashkina et al. teach a catalyst system wherein the pH 3.3-7.0, and the catalyst system showed high selectivity, see page 161.

Ascertainment of the difference between the prior art and the claims (M.P.E.P. §2141.02).

Sauer et al. catalyst system and process for the synthesis of methyl mercaptan differs from the instantly claimed catalyst system and process for the synthesis of methyl mercaptan in that applicants' claimed catalyst system and process wherein the pH of the catalyst, measured on a 10% strength aqueous suspension, is in the range from 5.0 to 9.7 while Sauer et al. teach a process wherein the pH is 8-14. On the other hand, Mashkina et al. teach a catalyst system wherein the pH is 3.3-7.0.

Finding of prima facie obviousness--rational and motivation (M.P.E.P. §2142-2143)

The instantly claimed catalyst system and process for the synthesis of methyl mercaptan would have been suggested to one of ordinary skill in view of the teaching Sauer et al. and Mashkina et al.

One of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by varying the process conditions and catalyst composition and concentration from the teaching of Sauer et al. and Mashkina et al. to obtain a catalyst system for the synthesis of methyl mercaptan. Said person would have been motivated to practice the teaching of the reference cited because it demonstrates that methyl mercaptan is useful in industrial applications.

The Examiner notes that varying the reaction conditions in a chemical reaction is a well-known chemical practice to optimize the process efficiency of the system and does not constitute a patentable distinction. Also, merely modifying the process conditions such as concentration is not a patentable modification absent a showing of criticality. In *re Aller*, 220 F.2d 454, 105 U. S. P. Q. 233 (C. C. P. A. 1955).

Moreover, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. It should be noted that the pH of the catalyst system is a function of dilution of the catalyst medium. That is, a 10% dilution will give a different pH value from undiluted catalyst medium. Therefore, the pH of the catalyst, measured on a 10% strength aqueous suspension is not a patentable modification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Sullivan can be reached on 571-272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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/Chukwuma O. Nwaonicha/
Examiner, Art Unit 1621

(for)

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